## CLAIMS

1. A hydrocarbon material processing system comprising:

a gasification furnace for pyrolyzing and gasifying at least one of wastes, residual hydrocarbon heavy oil, and organic matter to produce a heat source gas; and

a cracking furnace for thermally cracking a hydrocarbon material by using the heat source gas produced in said gasification furnace.

2. The hydrocarbon material processing system as recited in claim 1, wherein said cracking furnace comprises a cracking furnace for an ethylene manufacturing process.

3. The hydrocarbon material processing system as recited in claim 1, wherein said gasification furnace is configured to separately produce a first gas by pyrolysis and gasification of the at least one of wastes, residual hydrocarbon heavy oil, and organic matter and a second gas by combustion of a residue of the pyrolysis and gasification.

4. The hydrocarbon material processing system as recited in claim 3, wherein the second gas is used as the heat source gas for said cracking furnace.

5. The hydrocarbon material processing system as recited in claim 3, further comprising:

a heat exchanger for preheating air by the second gas; and

a passage for supplying the preheated air to said cracking furnace.

6. A hydrocarbon material processing system comprising:

a gasification furnace for pyrolyzing and gasifying at least one of wastes, residual hydrocarbon heavy oil, and organic matter to produce a heat source gas; and

a reforming furnace for reforming a hydrocarbon material by using the heat source gas produced in said gasification furnace.

7. The hydrocarbon material processing system as recited in claim 6, wherein said reforming furnace comprises a reforming furnace for a hydrogen manufacturing process.

8. The hydrocarbon material processing system as recited in claim 6, wherein said gasification furnace is configured to separately produce a first gas by pyrolysis and gasification of the at least one of wastes, residual hydrocarbon heavy oil, and organic matter and a second gas by combustion of a residue of the pyrolysis and gasification.

9. The hydrocarbon material processing system as recited in claim 8, wherein the second gas is used as the heat source gas for said reforming furnace.

10. The hydrocarbon material processing system as recited in claim 8, further comprising:

a heat exchanger for preheating air by the second gas; and

a passage for supplying the preheated air to said reforming furnace.

11. A hydrocarbon material processing method comprising:

pyrolyzing and gasifying at least one of wastes, residual hydrocarbon heavy oil, and organic matter to produce a heat source gas; and

supplying the heat source gas to a cracking furnace for thermally cracking a hydrocarbon material.

12. The hydrocarbon material processing method as recited in claim 11, wherein said cracking furnace comprises a cracking furnace for an ethylene manufacturing process.

13. The hydrocarbon material processing method as recited in claim 11, wherein said pyrolyzing and gasifying comprises separately producing a first gas by pyrolysis and gasification of the at least one of wastes, residual hydrocarbon heavy oil, and organic matter and a second gas by combustion of a residue of the pyrolysis and gasification.

14. The hydrocarbon material processing method as recited in claim 13, wherein the second gas is used as the heat source gas for said cracking furnace.

15. The hydrocarbon material processing method as recited in claim 13, further comprising:

preheating air by heat exchange with the second gas; and

supplying the preheated air to said cracking furnace.

16. A hydrocarbon material processing method comprising:

pyrolyzing and gasifying at least one of wastes, residual hydrocarbon heavy oil, and organic matter to produce a heat source gas; and

supplying the heat source gas to a reforming furnace for reforming a hydrocarbon material.

17. The hydrocarbon material processing method as recited in claim 16, wherein said reforming furnace comprises a reforming furnace for a hydrogen manufacturing process.

18. The hydrocarbon material processing method as recited in claim 16, wherein said pyrolyzing and gasifying comprises separately producing a first gas by pyrolysis and gasification of the at least one of wastes, residual hydrocarbon heavy oil, and organic matter and a second gas by combustion of a residue of the pyrolysis and gasification.

19. The hydrocarbon material processing method as recited in claim 18, wherein the second gas is used as the heat source gas for said reforming furnace.

20. The hydrocarbon material processing method as recited in claim 18, further comprising:

preheating air by heat exchange with the second gas; and

supplying the preheated air to said reforming furnace.